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Docket No.: 1484.1005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of:

Syuuuzi KODAMA

Serial No. 09/813,162

Group Art Unit: 2626

Confirmation No. 2368

Filed: March 21, 2001

Examiner: Pierre, Myriam

For: AUTOMATIC TRANSLATOR AND COMPUTER-READABLE STORAGE MEDIUM
HAVING AUTOMATIC TRANSLATION PROGRAM RECORDED THEREON

BRIEF IN SUPPORT OF APPEAL UNDER 37 C.F.R. § 41.37

Mail Stop - Appeal Brief - Patents

Commissioner for Patents

PO Box 1450

Alexandria, VA 22313-1450

Sir:

In a Notice of Appeal filed April 17, 2006, Applicants appealed the Examiner's November 15, 2005 Office Action finally rejecting claims 1, 3, 4 and 6-8. On July 17, the date of Applicants' original submission of the Appeal Brief, a fee of \$500.00 was submitted along with a Petition for a One-Month Extension of Time and the fee for same. Applicants subsequently received a Notice of Non-Compliant Appeal Brief. The currently submitted Appeal Brief represents the corrected version of the Appeal Brief submitted on July 17, 2006.



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RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Mail Stop – Appeal Brief - Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Notification of Non-compliant Appeal Brief mailed August 8, 2006 and having a period for response set to expire on September 8, 2006.

Applicants originally submitted an Appeal Brief on July 17, 2006. The attached Appeal Brief serves as a corrected replacement for the Brief submitted on July 17, 2006. Reconsideration of the corrected version of the Appeal Brief is respectfully requested.

(I) Real Party In Interest

The real party in interest in the present appeal is the assignee Fujitsu Limited.

(II) Related Appeals and Interferences

The undersigned attorney, the appellant, and the assignee know of no related appeals or interferences which would be directly affected by or directly affect or have a bearing on the Board's decision in the present appeal.

(III) Status of Claims

Claims 2 and 5 were cancelled. Claims 1, 3-4, and 6-8 are currently pending. Claims 1, 3-4, and 6-8 stand finally rejected and are appealed.

(IV) Status of Amendments

No amendments have been filed subsequent to the final rejection.

(V) Summary of Claimed Subject Matter

1. Independent claim 1

According to the subject matter of independent claim 1, a character string to be translated is input from the original inputting means (the original inputting means corresponds to the input unit 114 in FIG. 2 and the original inputting unit 1 of FIG. 3). See specification of the present invention, page 4, lines 15-20. The morphological analyzer means (the morphological analyzer means corresponds to the morphological analyzer 2 of FIG. 3) then performs morphological analysis to allow the character string to be converted to morphemes. See specification of the present invention, page 4, lines 15-20. For example, if the string, "Thu, 09 Jul 1998 07:49:30 – 0700 is inputted, the morphological analyzer produces:
[Thu][.][09][July][1998][07:49:30][-0700].

The converting means (the converting means corresponds to the converter 3 of FIG. 3) then converts the morphemes to the conceptual categories indicative of semantic information. See specification of the present invention, page 5, lines 15-18. For example, the morpheme [Thu] would be converted to [abbreviated day of the week]. See specification of the present invention, page 5, line 18. The conversion from the morphemes to the conceptual categories results in the divided morphemes being checked against a vocabulary information file (element 6 in FIG. 3). See specification of the present invention, page 5, lines 2-4. A definition is given to

predetermined conceptual categories in the vocabulary information file. See specification of the present invention, page 5, lines 5-8.

Next, the typical sentencing verifying means (the typical sentence verifying means corresponds to the typical sentence verifying unit 4 of FIG. 3) verifies whether the sequence of categories has a fixed regularity, that is, whether there is a string of predetermined typical conceptual categories in the sequence of the conceptual categories by checking the pattern matching table 7 of FIG. 4. See specification of the present invention, page 5, lines 18-22. The typical sentence verifying means (the typical sentence verifying unit 4 of FIG. 3) has a first table that stores a pair of the string of the predetermined conceptual categories and the pattern of the predetermined translated sentence corresponding to the string. See specification of the present invention, page 6, lines 10-13.

Then the replacing means (the replacing means corresponds to the replacing unit 5 of FIG. 3) generates a pattern of the predetermined translated sentence if the typical sentence verifying means verifies that the specific pattern matching, for example, [abbreviated day of the week] [comma] [day] [abbreviated month] [year written by four digits] can be determined from prepared patterns. See specification of the present invention, page 5, lines 22-26 and page 6, lines 1-3. The replacing means (the replacing unit 5 of FIG. 3) also replaces the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes by referring to the replacing table 8. See specification of the present invention, page 6, lines 3-8. The replacing means (the replacing unit 5 of FIG. 3) also has a second table that stores a pair of the morpheme constituting the pattern of the translated sentence and the predetermined translated word corresponding to the morpheme. See specification of the present invention, page 6, lines 16-18.

The present invention provides an automatic translator capable of executing high-speed analytical processing of a typical sentence by a pattern matching method and provides a computer-readable storage medium having an automatic translation program recorded thereon.

Thus, when a typical sentence is included in the original and the translation result of the typical sentence can be decided based on the corresponding relationship between the typical sentence and the translated sentence, the translation relating to only the corresponding part is translated by the present invention. Hence, the result does not have to be sent to the deeper level analyzer. Thus, the length of the original to be sent to the deeper level analyzer is reduced. As a result, the possibility that erroneous translation will occur is decreased, and processing time required for translation can be shortened.

2. Independent claim 4

Independent claim 4 is directed to a computer-readable storage medium having an automatic translation program recorded on the medium. According to claim 4, the automatic translation program causes the computer to execute the various operations recited in the claim.

An original to be translated, for example, a character string, is inputted by input processing S1 of FIG. 4. See specification of the present invention, page 4, lines 15-20. The sequence of morphemes from the original inputted is then divided using a morphological analysis in an analyze morphemes operation S2 of FIG. 4. See specification of the present invention, page 4, lines 15-20. Next, the morphemes divided by the morphological analysis are converted to conceptual categories in operation S3 of FIG. 4, and the conceptual categories are outputted. After the existence of the string of predetermined typical conceptual categories in a sequence of the conceptual categories outputted are verified in operation S4 of FIG. 4, a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories is generated in accordance with the description regarding independent claim 1 in operation S7 of FIG. 4.

As is also described in the description of claim 1, the operations of independent claim 4 are executed in accordance with a vocabulary information file 6 defining a relationship between the conceptual categories and the morphemes contained therein. See specification of the present invention, page 5, lines 22-26 and page 6, lines 1-3. See also specification of the present invention, page 5, lines 2-4 and specification of the present invention, page 6, lines 16-18.

3. Independent claim 7

Independent claim 7 is directed to a method of automatically translating an original text. According to claim 7, a string of predetermined conceptual categories is linked with morphemes contained in the string and a pattern of predetermined translated sentences corresponding to the string. See specification of the present invention, page 16, lines 14-25 and page 16, line 26 – page 17, line 5. Next, the sequence of morphemes of the original text is converted to conceptual categories in operation S3 of FIG. 4 and in operation S4 of FIG. 4, a determination is performed regarding whether the string of the predetermined conceptual categories exists in the converted conceptual categories. See specification of the present invention, page 5, line 18.

See specification of the present invention, page 5, lines 18-22. Finally, according to claim 7, a pattern of a translated sentence is generated for a string of the conceptual categories and the pattern of the translated sentence is replaced with translated words corresponding to the sequence of morphemes of the translated sentence in accordance with the linkage when a determination is made that the string of the predetermined typical conceptual categories exists in the converted conceptual categories (operation S7 of FIG. 4). See specification of the present invention, page 5, lines 22-26 and page 6, lines 1-3.

4. Independent claim 8

Independent claim 8 is directed to a method for translating language in which morphemes are converted to a string of conceptual categories (operation S3 of FIG. 4). See specification, page 4, lines 3-4. After the morphemes are converted, a translated sentence is generated corresponding to the string of conceptual categories (S7 of FIG. 4). See specification, page 4, lines 7-9. To convert the morphemes, the morphemes are divided and compared against a vocabulary information file 6 formed of a specific library to extract the divided morphemes as conceptual categories and extracting a conceptual category defined by a definition included within the information file when a target morpheme satisfies a condition of each definition in the vocabulary information file. See specification, page 5, lines 2-10.

(VI) Grounds Of Rejection To Be Reviewed On Appeal

- A. Claims 1, 4, and 7 stand rejected as being anticipated under 35 U.S.C. § 102 by U.S. Patent Number 5,225,981, issued to Toshihiko Yokogawa *et al.* (hereinafter referred to as Yokogawa)
- B. Claims 3 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yokogawa in view of U.S. Patent Number 5,895,446 (Takeda)
- C. Claim 8 stands rejected with no indication of grounds of rejection

(VII) Argument

- A. Claims 1, 4, and 7 stand rejected as being anticipated under 35 U.S.C. § 102 by Yokogawa. Claims 1, 4, and 7 stand or fall together as a group.

1. Background of the Reference on which the Rejection is Based

Yokogawa attempts to address the problem of coupling of proper nouns in a language analyzer. According to Yokogawa, Yokogawa is capable of judging the extent of the coupling degree between two successive words and capable of judging whether the words are a phrase based on the result. According to Yokogawa, traditionally, upon analyzing morphemes of English sentences, a succession of words starting from a capital letter, is generally parsed as one proper noun. It is not always appropriate to recognize words starting from a capital letter as one proper noun as a whole, as the words may be a plurality of proper nouns that occasionally appear successively.

Yokogawa is directed to a language analyzer for morphemically and syntactically analyzing natural languages used in an automatic translator. The language analyzer includes a dictionary including morpheme data for words, compound words and phrases, and a parsing analyzer for conducting morphological analysis for an inputted sentence by referring to the dictionary. The dictionary contains data for the coupling degree indicating the coupling degree between each of words constituting the compound words or phrases, and the parsing analyzer refers to the dictionary for the respective words contained in the inputted sentence.

According to Yokogawa, English text inputted from an input section is read into a pre-editing section. The pre-edited English data is then transferred together with information obtained in the pre-edition to a morphological analysis section, which divides the sentence by referring to a word dictionary, analyzes the morphemes of the English sentence, and performs various types of arrangements such as processing for unknown words. See Yokogawa, column 10, line 38 *et seq.*

The English data after morpheme analysis is transferred together with the dictionary information obtained by the morphological analysis to a parsing section, which is a functional section that performs parsing for the surface structure of an English sentence by applying a grammatical rule to the English data and determines structural possibilities. A corresponding Japanese sentence tree is prepared from a structural tree and converted into a Japanese underlying structure from which Japanese can be translated. See Yokogawa, column 11, line 5 – line 18.

2. Relevant Law

By its language, 35 U.S.C. § 102 requires that each and every element of a claim be present in a single cited reference to properly have the reference anticipate the claim. See *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566, 1567 (Fed. Cir. 1992), citing *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677, 7 USPQ2d 1315, 1317 (Fed. Cir. 1988); *Lindemann*

Maschinenfabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321, 1326 (Fed. Cir. 1992); and *Elmer v. ICC Fabricating Inc.*, 67 F.3d 1571, 36 USPQ2d 1417, 1419 (Fed. Cir. 1995).

3. Application of the Relevant Law

Applicants submit that claims 1, 4, and 7 are patentable over Yokogawa, as Yokogawa does not disclose, “replacing means for generating a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories to replace the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories constituting the patterns of the translated sentence,” as recited in claim 1, for example.

On page 4 of the Office Action, the Examiner alleged that Yokogawa discloses, “a replacing means for generating a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories to replace the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories. . . .” See Office Action, at page 5 [*sic*].

According to the Examiner, the structure transformation section 7024 of Yokogawa prepares a corresponding Japanese structure tree from the intermediate English structure and transforms the corresponding Japanese structure tree into a Japanese-underlying structure, from which a Japanese sentence can be translated with translated words corresponding to the original morphemes of the conceptual categories constituting the patterns of the translated sentence.

Applicants respectfully submit that assuming *arguendo* that the Japanese Underlying Structure tree replaces the Japanese Structure tree in Yokogawa, the Japanese Underlying Structure tree is not the equivalent of what serves as a replacement in the present invention. In contrast to Yokogawa, in the present invention, the replacement means generates a pattern of a predetermined translated sentence and replaces the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories. Therefore, the replacement in the present invention is, “translated words corresponding to the original morphemes of the conceptual categories.”

As described in the specification of the present invention, the translation relating to the corresponding part, that is, "the translated words," is already translated to prevent "deeper level analysis." See specification of the present invention, page 26, lines 18-26.

Yokogawa specifically states that the Japanese-underlying structure, shown by the Japanese underlying structure tree, is sent to a translation generation section where a translated sentence is generated. See Yokogawa, column 51, lines 46-49. Applicants respectfully submit that in contrast to the present invention, the Japanese-underlying structure tree of Yokogawa is merely structure and does not include translated words.

Applicants further submit that Yokogawa does not verify whether a string of predetermined typical conceptual categories exists in a sequence of conceptual categories to determine whether a pattern of a predetermined translated sentence should be generated, as in the present invention. Rather, Yokogawa simply sends English with parsing information to the syntactic analysis II section 7020. See Yokogawa, column 51, lines 29-32.

In light of the foregoing, claims 1, 4, and 7 are patentable over Yokogawa, as Yokogawa fails to disclose the above-identified features of the invention.

B. Claims 3 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yokogawa in view of U.S. Patent Number 5,895,446 (Takeda).

1. Background of the Reference on which the Rejection is Based

According to Takeda, traditionally, some translation patterns are represented by a nested structure which contains a variable representing another translation pattern. With such a configuration, however, the range of language patterns which can be matched by one translation pattern is very narrow, as only one variable is provided for each translation pattern. According to Takeda, where the part of speech of the source language pattern differs from that of the target language pattern, the narrowness would cause a problem. For example, if the source language pattern is, "worry about," and the target language pattern is, "shimpai da," the pattern of speech of the source language pattern is a verb, whereas the pattern of speech of the target language pattern is an adjective. In such an instance, the target pattern cannot, traditionally, be represented by a single variable. See Takeda, column 1, lines 53-63.

Takeda is directed to a method for associating a part of a source language text with a translation pattern to translate the part of the source language text into a target language. According to Takeda, translation patterns are provided wherein each of the patterns includes a

source language pattern, a target language pattern corresponding to the source language pattern, a variable corresponding to the source language pattern, and a variable corresponding to the target language pattern. If a part of the source language text matches a source language pattern, the source language pattern is represented with a first variable and the corresponding target language pattern is represented by a second variable. See Takeda, column 2, lines 27-47.

2. Relevant Law

To establish a *prima facie* case of obviousness, one of the three basic criteria that must be met is that the reference must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the references, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of the criteria.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections.

3. Application of the Relevant Law

Applicants respectfully submit that claims 3 and 6, via their respective independent claims, are patentable over Takeda, as Takeda does not teach or suggest, "replacing means for generating a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories to replace the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories," as recited in independent claim 1, for example.

Applicants respectfully submit that Takeda is merely concerned with representing language patterns with variables and does not generate a pattern of a predetermined translated sentence to replace the sentence with translated words corresponding to original morphemes, as in the present invention.

Therefore, claims 3 and 6, via their respective independent claims, are patentable over Yokogawa in view of Takeda, as neither Yokogawa nor Takeda, taken alone or in combination, teaches or suggests the above-identified feature of the claims.

C. Claim 8

Claim 8 was added in the Amendment dated March 15, 2006. Applicants respectfully submit that claim 8 is patentable over the references, as neither of the references, alone or in combination, teach or suggest, "extracting a conceptual category defined by a definition included within the information file when a target morpheme satisfies a condition of each definition included within the vocabulary information file," as recited in claim 8.

Conclusion

Applicants respectfully submit that the Examiner has not established anticipation of the relevant claims, nor has the Examiner established a prima facie case of obviousness by preponderance of the evidence for the relevant claims. Reversal of the rejection is, therefore, requested.

Respectfully submitted,

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VIII. Claims Appendix

1. (PREVIOUSLY PRESENTED) An automatic translator, comprising:
original inputting means for inputting an original to be translated;
morphological analyzing means for dividing a sequence of morphemes from the original inputted by the original inputting means;
converting means for converting the morphemes to conceptual categories to be output;
typical sentence verifying means for verifying whether a string of predetermined typical conceptual categories exists in a sequence of the conceptual categories outputted from the converting means; and
replacing means for generating a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories to replace the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories constituting the pattern of the translated sentence when the string of predetermined typical conceptual categories is determined to exist in the sequence of the conceptual categories by the typical sentence verifying means,
wherein the converting means has a vocabulary information file that defines a relationship between the conceptual categories and the morphemes contained therein, the typical sentence verifying means has a first table that stores a pair of the string of the predetermined conceptual categories and the pattern of the predetermined translated sentence corresponding to the string, and the replacing means has a second table that stores a pair of the morpheme constituting the pattern of the translated sentence and the predetermined translated word corresponding to the morpheme.
2. (CANCELLED)
3. (PREVIOUSLY PRESENTED) The automatic translator according to claim 1, wherein at least one of the vocabulary information file, first table and second table is defined or set by a user.
4. (PREVIOUSLY PRESENTED) A computer-readable storage medium having an automatic translation program recorded thereon, the automatic translation program causing a computer to execute operations, comprising:
inputting an original to be translated;

dividing a sequence of morphemes from the original inputted using a morphological analysis;

converting the morphemes divided by the morphological analysis to conceptual categories and outputting the conceptual categories;

verifying whether a string of predetermined typical conceptual categories exists in a sequence of the conceptual categories outputted; and

generating a pattern of a predetermined translated sentence corresponding to the string of the conceptual categories to replace the pattern of the predetermined translated sentence with translated words corresponding to the original morphemes of the conceptual categories constituting the pattern of the translated sentence when the string of predetermined typical conceptual categories is determined to exist in the sequence of the conceptual categories,

wherein the operations are executed in accordance with a vocabulary information file defining a relationship between the conceptual categories and the morphemes contained therein, a first table storing a pair of the string of the predetermined conceptual categories and the pattern of the predetermined translated sentence corresponding to the string is used for the verifying, and a second table storing a pair of the morpheme constituting the pattern of the translated sentence and the predetermined translated word corresponding to the morpheme.

5. (CANCELLED)

6. (PREVIOUSLY PRESENTED) The computer-readable storage medium according to claim 4, wherein at least one of the vocabulary information file, first table and second table is defined or set by a user.

7. (PREVIOUSLY PRESENTED) A method of automatically translating an original text, comprising:

linking a string of predetermined conceptual categories with morphemes contained therein and a pattern of predetermined translated sentences corresponding to the string;

converting a sequence of morphemes of the original text to conceptual categories and determining whether the string of the predetermined conceptual categories exists in the converted conceptual categories; and

generating a pattern of a translated sentence for a string of the conceptual categories and replacing the pattern of the translated sentence with translated words corresponding to the sequence of morphemes of the translated sentence in accordance with the linkage upon

determining that the string of the predetermined typical conceptual categories exists in the converted conceptual categories.

8. (PREVIOUSLY PRESENTED) A method for translating language, comprising:
converting morphemes to a string of conceptual categories; and
generating a translated sentence corresponding to the string of the conceptual categories;

wherein said converting includes dividing the morphemes and comparing the divided morphemes against a vocabulary information file formed of a specific library to extract the divided morphemes as conceptual categories and extracting a conceptual category defined by a definition included within the information file when a target morpheme satisfies a condition of each definition included within the vocabulary information file.

IX. Evidence Appendix

Not applicable.

X. Related Proceedings Appendix

Not applicable.